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09/188,241	11/09/98	LUO	W LUO-4

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FARKAS AND MANELLI
SEVENTH FLOOR
2000 M STREET N W
WASHINGTON DC 20036-3307

EXAMINER	
ENGLUND, T	
ART UNIT	**PAPER NUMBER**
2816	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/188,241	Applicant(s) Luo
	Examiner Terry L. Englund	Group Art Unit 2816

☒ Responsive to communication(s) filed on *Jun 19, 2000* .

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-22* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-22* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☒ The drawing(s) filed on *Nov 18, 1999* is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☒ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Response to Amendment/Drawings

The amendment submitted on Jun 19, 2000 was reviewed and considered with the following results:

Although pages 1 and 8 of the amendment imply that proposed drawing corrections have been submitted, the examiner was unable to located them within the application. Therefore, the objections to the drawings which were described in the previous Office Action are maintained and are repeated later.

Similarly, the substitute Abstract mentioned on pages 1 and 8 was also not found. Its objections are also maintained and are repeated later.

The changes to the specification overcome most of the objections described in the previous Office Action. However, the problems on pages 2 (line 5) and 9 (lines 8 and 14) were not addressed, and the label related problem on page 9 was not corrected because the addition was entered on page 10 instead. Therefore, these objections are also described later under the appropriate section. All the other objections described in the previous Office Action have been withdrawn.

Amended claim 17 created a new objection which is described later under the appropriate section.

After reading the comments of the amendment, reviewing the claim language, and reconsidering the specification, the rejections of claims 13-17 and 20 under 35 U.S.C. 112, first paragraph have been withdrawn. The current source can maintain a charge in various ways known to one of ordinary skill in the art.

The amended claims have overcome the rejections of claims 15-17, 21 and 22 under 35 U.S.C. 112, second paragraph as described in the previous Office Action. Although these original rejections have been withdrawn, the amended claims created new concerns which are described later under the appropriate section.

The amended claims have overcome the original rejections of claims 1-5, 8-10, 12, 18, 19, 21 and 22 under 35 U.S.C. 102(b) with respect to Harston. However, the rejections claims 1-5, 8-10, 12, 18, and 19 have been rewritten and are now presented under 35 U.S.C. 103(a) later. Claims 21 and 22 now contain allowable material since the reference of Harston does not show or disclose the current from the current source continuously flowing to the load.

Since the rejections of claims 6, 7 and 11 under 35 U.S.C. 103(a) relate to rejected claims 1 and 10, those rejections are maintained and are repeated later.

Drawings

The drawings remain objected to because Fig. 3 does not show the "numbers "0.5", "1.0" and "0.5" adjacent" the transistors as page 3, lines 21-24 describe. Figs. 3, 5, 6A, 6B and 8 show signal "IS" which is described as "/S" within the specification (e.g. page 3, line 20 and page 7, line 12).. It is suggested the figures, or the specification be modified to ensure consistent labeling

between the figures and specification. Fig. 2 does not show "Vo" described on page 4, line 6. Corrections are required. If proposed drawings had been submitted with the amendment on Jun 19, 2000, they were apparently misplaced. Therefore, new copies of those proposed drawings are requested.

Specification

The abstract remains objected to because line 2 "having" should be --has-- to help improve word flow. The phrase "The disclosed embodiment" on line 4 is implied. Therefore, it is suggested the phrase "disclosed embodiment of the" be deleted. Corrections are required. See MPEP § 608.01(b). As with the proposed drawings, a new copy of the substitute abstract is requested because the one submitted with the amendment on Jun 20, 2000 was apparently misplaced prior to the application being given to the examiner.

The disclosure is objected to because of the following informalities: It is believed "triod" on pages 2 (line 5) and 9 (lines 8 and 14) should be --triode--. Page 9 does not identify what the various labels within the equations represent. For example, does "WLCox" represent one characteristic, or possibly three distinct characteristics (e.g. "W", "L" and "Cox")? The addition to page 10, line 12 of the amendment was apparently an attempt to address/correct the objection on page 9 with respect to the labels. However, the amended change deleted line 12 on page 10 and added the label information. Therefore, the page 9 objection remains and now page 10, line 12 is now confusing as amended. Appropriate corrections are required.

Claim Objections

Claim 17 is objected to because of the following informality: Since the circuit already comprises various elements, it is suggested --further-- be added prior to "comprises" on line 2 of claim 17. An appropriate correction is required.

Claim Rejections under 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. It is not clear in claims 1 (line 8), 18 (line 10), 21 (line 8) and 22 (line 9) what "substantially continuously" means because the phrasing is confusing. It is suggested the term "substantially" be deleted. It is not clear how "a load" in claim 3 (line 2) relates to "a load" now recited in claim 1 (line 6). Related to this, which load does "said load" of claim 4 refer to, the one in claim 1 or claim 3? Claim 13, lines 2-3 appear to be misdescriptive with respect to a "pull-down mirror path" comprising a "pull-up amplifier." It is not clear in claim 18 how "reduce charge injection" of line 10 relates to "reducing charge injection" recited on line 1. The description "continuously receives said current flowing from said current source" in claims 21 (lines 8-9) and 22 (lines 9-10) is misleading. For example, the applicant's Fig. 5 shows current IA from current source 420 which would flow to load 440 only when transistor switch 430 is

conducting. However, when transistor switch 430 is off, it is believed current IA would not flow to load 440.

Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: between the various elements already within the "current source switching circuit" from previously recited claims, and "a charged capacitor" recited within claim 17.

Dependent claims carry over the rejection(s) from claim(s) upon which they depend.

Claim Rejections under 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

In so far as being understood, claims 1-5, 8-10, 12, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harston, the reference cited in the previous Office Action. In Fig. 3 Harston shows a current source switching circuit comprising transistor switch MP2; a pull-down mirror path MP3 in parallel with said transistor switch MP2; and load 10pf. Although the reference does not clearly disclose a reduction in charge injection, it would be obvious to one of ordinary skill in the art that resistor 37.5Ω would reduce the charge injection

flowing to load 10pf because it will start discharging load 10pf when transistor switch MP2 is turned off, thus rendering claim 1 obvious. MP3 is considered a pull-down mirror path since it mirrors the operation of the transistor switch MP2 and allows the current from transistor MP1 to flow down to ground. See column 2, lines 64-68. The figure also shows a MOS transistor MP1 current source MP1 coupled between power source CURRENT CELL and the first side of transistor switch MP2; a load 10pf comprising a charging capacitor 10pf coupled between ground and a second side of transistor switch MP2, thus rendering obvious claims 2-5. Since a transistor can be deemed an amplifier, pull-down mirror path MP3 can be deemed a pull-down amplifier, rendering claim 8 obvious. When transistor MP3 is conducting, its output (i.e. drain) follows the current source MP1 side of the transistor switch MP2 by allowing the current to flow through transistor MP3, thus rendering obvious claim 9. Since current source MP1 is a MOS transistor, claim 12 is rendered obvious. Transistor MP3 can also be deemed a complementary pull-down mirror path transistor switch which operates the opposite of transistor switch MP2, rendering claim 10 obvious. It is complementary since it receives a control signal which is a complement of the signal received by transistor switch MP2. Transistor/switch MP3 provides a pull-down mirror path parallel with current switch MP2, wherein switches MP3 and MP2 are alternatively on and off, rendering obvious claims 18 and 19 because when transistor MP2 is off, the resistor 37.5Ω will help to discharge load 10pf, thus reducing the charge injection flowing to the load.

Claims 6, 7, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harston as applied to claims 1 and 10 above, and further in view of the compensated transistor

switch of the applicant's Prior Art Fig. 3. Harston shows only a single transistor for each of transistor switch MP2 and complementary pull-down mirror path transistor switch MP3. It would have been obvious to one of ordinary skill in the art to replace each of the single transistors MP2 and MP3 of Harston's circuit with a respective compensated transistor switch of the applicant's Fig. 3. Transistors 302b, 304b and 306b would correspond to the first serial combination of respective first compensating, functional MOS, and second compensating transistors, wherein transistors 302a, 304a and 306a would correspond to the second serial combination of respective first complementary compensating, complementary functional MOS, and second complementary compensating transistors, thus rendering obvious claims 6, 7 and 11. As the applicant admits on page 3, lines 8-28, the use of such compensated switches are conventional/well known means for reducing charge injection of switches in analog circuits. Since Harston's circuit in Fig. 3 can be considered a current switch circuit related to an analog circuit, the compensated switch of Fig. 3 would help reduce charge injection within the circuit if that was desired.

Claims 13-17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harston as applied to claim 1 above. As described previously, Fig. 3 of Harston shows a circuit with a transistor switch MP2, pull-down mirror path MP3, current source MP1, and load capacitor 10pf. However, the reference does not clearly show or disclose a pull-up amplifier as recited within claim 13. It would have been obvious to one of ordinary skill in the art to modify the circuit of Fig. 3 by reversing the polarities and transistor types. The reversal of the polarities and transistor types would provide a means for a higher output voltage. With the reversal,

transistor 32 would be coupled between power source CURRENT CELL and the common connection of current source 20 and transistor switch 30. Therefore, transistor 32 could be deemed a pull-up amplifier, rendering claim 13 obvious. Current source 20 would be coupled between ground and one side of transistor switch 30, rendering obvious claim 14. Since current source 20 would be sinking current to ground, it could be deemed a current sink coupled between ground and one side of transistor switch 30, rendering claims 15 and 16 obvious. The circuit would comprise charging capacitor 10pF, coupled between power source CURRENT CELL and one side of transistor/current switch MP2/30, rendering claim 17 obvious. Deeming capacitor 10pF a current source, claim 20 is rendered obvious. It would charge up to CURRENT CELL when transistor 32 conducts, and discharge (or supply current) when transistor 30 conducts.

No claim is allowable as presently written.

However, claims 21 and 22 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action. There is presently no strong motivation to ensure the load continuously receives a current, and the charge injection of the load is reduced, as recited in both claims 21 and 22.

Response to Arguments

The applicant's arguments filed Jun 19, 2000 have been fully considered but they are not persuasive. The applicant argues that Harston fails to teach or disclose the continuous reduction of "charge injection flowing to a load." Take into account for the amended claims with respect to that limitations related to the flow, the original rejections under 35 U.S.C. 102(b) were withdrawn

and new rejections for some of the claims were made under 35 U.S.C. 103(a). As described in the new rejections described above, when transistor switch MP2 of Harston is turned off, resistor 37.5Ω will help to discharge load 10pf. Therefore, the charge injection will no longer be flowing to the load.

The applicant also argues that Harston does not provide a continuous flow of current to the load. However, that feature is not clearly recited within the claims. If this continuous flow of current to the load if deemed a critical feature, it is suggested wording to that effect be added to ensure each of the independent claims recites it since patentability is based on what is claimed.

Therefore, it is believed the rejections are proper with respect to the present claim language.

The applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event.

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terry L. Englund whose telephone number is (703) 308-4817. The examiner can normally be reached Monday-Friday from 7 AM to 3 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Callahan, can be reached on (703) 308-4876. The fax phone number for this Art Unit is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

TLE

Terry L. Englund

18 August 2000

TIMOTHY P. CALLAHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800